Uganda Health Information Network

Poster Presentation – mHealth Summit

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Overview

Like many developing countries, Uganda faces massive health challenges and a high burden of disease with inadequate health resources. The use of innovative Information and Communication Technologies (ICT) has the potential to allow the Ministry of Health to collect critical health data more effectively and to deliver reports and analysis based on this data, along with clinical content, continuing medical education, and other information resources to workers in rural health facilities. Using ICT, the Uganda Health Information Network (UHIN) has successfully provided an affordable and sustainable approach to increasing access to accurate health information in remote areas of Uganda while simultaneously improving the cost-effectiveness of data collection and dissemination.

Highlights

UHIN was conceived as two–way system for information exchange utilizing the existing cellular telephone network and low-cost, simple-to-use, energy-efficient handheld computers (also known as Personal Digital Assistants or PDAs) to support health information dissemination, data collection and reporting, and email exchange. Data transfer from and to the PDAs is facilitated using wireless access points and a server located in Kampala.

Key Network Features:

- The ability to schedule calls to flow at non-peak times avoiding higher cellular traffic and connection charges;
- The use mobile computing devices that require little or no user intervention in the field, reducing the need for technical support staff; and
- The use of devices that require minimum power to operate and can be recharged using solar panels.

Key Accomplishments:

- Designed, developed, and deployed two-way communication system and electronic HMIS data gathering and reporting tools, and implemented the system in 174 health facilities serving over 1 million people;
- Developed a mechanism for interactive delivery of relevant health information to rural health workers through the network;
- Trained over 800 rural health workers and records officers to use the network for health data gathering and reporting, and to access clinical information;
- Deployed 700 PDAs and 60 netbook and desktop computers to the field;
- The UHIN system for health information and data exchange has been adopted by the government and incorporated into MoH processes;
- Best practices through the UHIN project have been integrated into Uganda's national health information system strategic plan (Vision – 2015); and
- The UHIN model has been replicated in Mozambique.

Results

- A cost-effectiveness study of UHIN conducted by independent consultants in 2009 showed that the network reduces the cost of managing health information by 25% compared to cumbersome paper-based manual systems that are delay-prone, less reliable, and in some cases yielding incomplete data;
- The districts reported benefits including improved data quality at point of collection, more timely access to data for analysis and decision-making, and more rapid response to emerging situations;
- The proportion of punctual HMIS data reports from health facilities to districts and from districts to MOH significantly improved from 63% to close to 100% (based on survey made in 2006/7);
- 97% of users reported that access to relevant health information through UHIN improved their ability to provide better patient care; 87% of users reported faster and more accurate diagnosis; 90% reported a more informed choice of drugs; and close to 100% appreciated the cognitive value of the information they received through the network;
- A gender study conducted in 2009/10 in the five UHIN districts revealed that the project had made significant contributions to widening women's access to ICT, enhancing their status in their community, boosting self-esteem, overcoming isolation, expanding their knowledge and skill base, and in some cases increasing incomes.
- District health offices are using mobile technologies to conduct surveys in their districts to assess the efficacy of Home-Based Management of Fever programs, enhance child nutrition supplementation programs, and improve hospital management by generating daily hospital-based reports; and
- Learning from UHIN was integrated into the Ministry of Health's national health information system strategy.

Lessons Learned

Health content: Much of the power and potential of mobile devices lies in their ability to hold a virtual library of information resources, both pre-loaded and interactive. One of the factors contributing to the success of UHIN is its ability to deliver current, reliable, and relevant content to health workers in addition to providing data gathering/reporting tools.

Political support: Strong political will and support from the ultimate user of the technology is sine qua non for building a commitment to teamwork, addressing challenges, and fostering sustained use of the technology.

Stakeholder involvement: Identification and involvement of all stakeholders is essential. Failure to harmonize the interests and expectations of stakeholders at an early stage may jeopardize the successful introduction and acceptance of the technology.

High quality training and technical support: It is critically important that the project makes an adequate investment in the provision of high quality training to end users. Depending on the users' level of education and experience with the technology and tasks to be performed, 2 to 3 days of intensive residential training should be adequate. The successful use of mobile technologies requires technical support from trainers and database managers.

Power: Unreliable power supplies preventing users from being able to recharge their PDAs was the major challenge facing UHIN during the early periods of the project. The use of solar recharging options is highly recommended to overcome power issues.

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